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EXAMINER	
THOMPSON, JAMES A	
ART UNIT	**PAPER NUMBER**
2624	

DATE MAILED: 03/23/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/667,964	DALRYMPLE, JOHN CHARLES	
	Examiner	Art Unit	
	James A Thompson	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *21 September 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Applicant has not complied with one or more conditions for receiving the benefit of an earlier filing date under 35 U.S.C. 120 as follows:

The later-filed application must be an application for a patent for an invention which is also disclosed in the prior application (the parent or original nonprovisional application or provisional application); the disclosure of the invention in the parent application and in the later-filed application must be sufficient to comply with the requirements of the first paragraph of 35 U.S.C. 112. See *Transco Products, Inc. v. Performance Contracting, Inc.*, 38 F.3d 551, 32 USPQ2d 1077 (Fed. Cir. 1994).

Specification

2. The amendment filed 09 July 2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: On page 2, lines 14-15 of Applicant's amendments, entitled "Amendments to the Specification", the amendment "In the case of pseudo-random noise, the numbers ~~may~~ would be manipulated to achieve other effects" adds new matter to the specification. Instead of the possibility ("may") of the numbers being manipulated to achieve other effects, in the case of pseudo-random noise, the specification would read that the number will definitely ("would") be manipulated to achieve other effects, in

the case of pseudo-random noise. This is a significant change in the embodiment disclosed in the present application. Further, this change is used to support Applicant's position regarding pseudo-random noise that Applicant makes on pages 5-6 of Applicant's arguments.

Applicant is required to cancel the new matter in the reply to this Office Action.

Response to Arguments

3. Applicant's arguments filed 09 July 2004 have been fully considered but they are not persuasive.

Regarding page 5, lines 2-4: The amendments to the specification listed on page 2 of Applicant's arguments have been fully considered. The objections to the specification listed in item 2 of the first office action, dated 02 April 2004, have been withdrawn. However, some of the amendments to the specification in Applicant's arguments constitute an addition of new matter, as is discussed above in item 1 of the present office action.

Regarding page 5, line 5 to page 6, line 4: Examiner has not attempted to amend Applicant's claims by introducing the word "truly" as Applicant contends. The use of the word "truly" is simply a reasonable interpretation of the claim language. As discussed in item 4 of said first office action, the "random noise" recited in claim 3 must be truly random noise since Applicant makes the distinction in the claim language between "random noise" (claim 3) and "pseudo-random noise" (claim 4). Although "random noise" is sometimes used as a short-hand way of saying "pseudo-random noise", Applicant has clearly made the distinction both in the claim language and the specification of

the present invention. On page 6, lines 10-12, Applicant states that "[a]s pseudo-random noise is statistically similar to true random numbers, both of these approaches will be referred to as random number generation or random numbers."

Despite Applicant's contention on page 5, lines 11-15, Applicant has *not* specifically defined pseudo-random noise to mean "random noise generated by random numbers and then manipulated." There is no place in the specification in which the term "pseudo-random noise" is specifically pointed out to have this definition. Applicant's misuse of the term in the specification cannot be construed to mean that Applicant is acting as a lexicographer.

Applicant argues on page 5, lines 13-15 that "[o]ne skilled in the art would understand that random noise is that produced by a generation of random numbers, while pseudo-random noise is random noise generated by random numbers and then manipulated." This is simply not true. As is well-known in the art, random numbers and random noise are ideal concepts. In a string of random numbers, each number generated has an equal statistical likelihood as any of the other possible numbers that could have been generated, and each generated random number is completely independent of all other generated random numbers. Random numbers are used to generate random noise. A random number is an ideal, but is also a physical impossibility. In fact, an entire area of research exists and various projects are currently being conducted to find better ways in which to generate numbers that approximate random numbers.

The approximation to a random number that is generated in actual practice is referred to as a "pseudo-random number". A pseudo-random is not, as Applicant argues, "random noise

generated by random numbers and then manipulated". The specific terms "random noise" and "pseudo-random noise" are very basic terms in the art and have specifically defined meanings. Therefore, even if, *arguendo*, Applicant had acted as a lexicographer, Applicant would have been using a definition that is repugnant to the usual meaning of the term (see MPEP §608.01(o)).

Applicant is directed to several patents which corroborate Examiner's arguments regarding random and pseudo-random numbers. US Patent 6,065,029 to Richard Alan Weiss, dated 16 May 2000, states:

> "Conventional digital circuits used to generate random numbers may use oscillators, such as ring oscillators, and linear feedback shift registers ("LFSR"). For example, some conventional digital random number generators ("RNG") simply use a LFSR having an input which is a combination of the output and an intermediate stage. Such a conventional RNG is typically periodic. By designing the period of the RNG to be significantly longer than the sampling time, a stream of pseudo random numbers can be generated during a period." (column 2, lines 35-44 of Weiss)

Here, "random numbers" and "pseudo random numbers" are used interchangeably. In fact, the pseudo random number are generated using linear feedback of an oscillator coupled with an intermediate stage, thus creating an oscillating random number generator. In order to simulate a truly random number, the oscillation is designed to be significantly longer than the sampling time, thus giving a much better approximation to a truly random number.

Other areas of research use natural phenomena to generate pseudo-random numbers, and thus approximate truly random numbers well. For example, US Patent 5,987,483 to Edelkind et al.,

dated 16 November 1999, teaches a "random number generator based on naturally occurring events in which directional randomness of radioactivity is exploited to generate a random number sequence" (Abstract of Edelkind). Of course, no natural phenomenon is truly random. The pseudo-random number generated is simply a very good approximation to a truly random number.

Regarding page 6, lines 5-8: Applicant's amendments to claims 10 and 11 have been fully considered and overcome the rejections under 35 USC §112, 2nd paragraph. The rejections under 35 USC §112, 2nd paragraph listed in item 7 of said first office action have therefore been withdrawn.

Regarding page 6, lines 9-12: Applicant's amendments to claim 12 have been fully considered and overcome the rejection under 35 USC §112, 2nd paragraph listed in item 8 of said first office action. The rejection under 35 USC §112, 2nd paragraph listed in item 8 of said first office action has therefore been withdrawn.

Regarding page 6, line 16 to page 9, line 3: Examiner respectfully reminds Applicant that Examiner is required to give the broadest reasonable interpretation consistent with the specification (see MPEP §904.01). It is reasonable to interpret the term "error value" as the error between the printed value (00h or FFh for 8-bit digital values) and the grayscale value of the pixel. This interpretation is consistent with Applicant's specification, particularly page 2, lines 1-8.

The arguments are based on the amendments to the claims and not the claims as previously filed. The rejections based on prior art are discussed in detail below.

Claim Rejections - 35 USC §112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claim 3 states that "the first set of seed values is generated using random noise." Claim 4 states that "the first set of seed values are generated using pseudo-random noise." Claims 3 and 4 both further limit claim 1. Therefore, the pseudo-random noise of claim 4 is distinguished from the truly random noise of claim 3. However, it is not possible to generate a truly random noise. Random number and random noise generators generate pseudo-random numbers and pseudo-random noise in order to approximate randomness. As normally defined in the art, "random noise" is simply a short way of referring to "pseudo-random noise." However, since the pseudo-random noise of claim 4 is distinguished from the truly random noise of claim 3, a truly random noise must therefore be the intention of claim 3. Applicant does not disclose how a truly random noise is created. Therefore, claim 3 is non-enabling.

Claim Rejections - 35 USC §102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Mintzer (US Patent 5,210,602).

Claim 2 further limits the method of claim 1. Claim 9 further limits the medium of claim 8. Claim 2 and claim 9 have the same limitations. Claims 2 and 9 are therefore discussed together.

Regarding claim 1: Mintzer discloses a method for initializing a digital image reproduction system using error diffusion (column 5, lines 1-5 of Mintzer). Said method comprises initializing a first error buffer with a first set of seed values, wherein at least one of the seed values varies numerically from others of the seed values (column 7, lines 30-36 of Mintzer). The use of a random number generator to initialize the coefficients (column 7, lines 30-36 of Mintzer) provides a first set of seed values that vary numerically. Said random values are initially generated and stored for use with the error diffusion constants (column 7, lines 34-36 of Mintzer). Since random numbers are used to initialize the error diffusion filter (column 7, lines 30-36 of Mintzer), the error values stored initially in the error buffer are therefore randomized. The initial error values obtained using a randomized error diffusion filter can be considered the initial random seed values of the error buffer.

Said method further comprises using seed values in the error buffer to start an error diffusion process (figure 3 and column 7, lines 32-36 of Mintzer), wherein a first pixel has a non-zero error value (column 5, lines 24-34 of Mintzer). The first or given pixel position has an associated error value ($e_i f^1$) which is used in the error diffusion process and is in general non-zero (column 5, lines 24-34 of Mintzer).

Regarding claims 2 and 9: Figure 3 of Mintzer shows that a random number generator is used for each color. The variables $k_{r,s}^{ck}$ and $c_{r,s}^{ck}$ respectively represent a constant and a coefficient at index r,s for color ck (column 5, line 22 and column 6, lines 42-46 of Mintzer), such as shown in some of the equations that are listed (column 6, lines 39-41 and lines 59-61; and column 7, lines 3-6 of Mintzer). Figure 3 of Mintzer shows the generation of random coefficients that are used in the processes shown in figure 2a, figure 2b, and figure 2c of Mintzer, which show a system for error diffusion for each color individually (column 4, lines 24-32 and column 7, lines 36-41 of Mintzer). Therefore, a random number generator is used for each color (figure 3 of Mintzer). Therefore, Mintzer discloses that the method further comprises initializing at least one other error buffer with a different set of seed values (figure 3 and column 7, lines 30-36 of Mintzer), said error buffer corresponding to the error buffer of a different color.

Regarding claim 3: Mintzer discloses that the first set of seed values is generated using random noise (column 7, lines 31-36 of Mintzer).

Regarding claim 4: Mintzer discloses that the first set of seed values is generated using pseudo-random noise (column 7,

lines 31-36 of Mintzer). As is well known and practiced in the art, a random number generator in principle generates noise that is actually pseudo-random noise, which is used to approximate random noise. Further, the random noise values are manipulated (column 7, lines 34-42 of Mintzer).

Regarding claim 5: Mintzer discloses that the pixel values for the first color and second color are modified based on the associated diffusion error values (column 5, lines 24-30 and lines 62-66 of Mintzer), which are derived from the random seed values (column 7, lines 30-32 of Mintzer). An error (δ_i) is calculated for the first color (column 5, lines 47-52 of Mintzer). Said error is then used along with a coefficient (α^{12}) to calculate the quantized output value of the pixel of the second color (column 5, line 66 to column 6, line 5 of Mintzer). The difference between the modified pixel value and the output pixel value of the second color determines the error in the pixel value of the second color (column 6, lines 6-12 of Mintzer). The error in the pixel value of the second color is then used to update the diffused error value for the second color (column 6, lines 34-41 of Mintzer). The coefficient (α^{12}) therefore correlates the first random seed error value, stored in said first error buffer, and the second random seed error value, stored in said other error buffer. The error calculated using the coefficient (α^{12}) influences the quantization of the second color and is used to reduce graininess in the resultant color image (column 4, line 64 to column 5, line 1 of Mintzer). Therefore, the other set of seed values contains values negatively correlated with the values of the first set.

Regarding claim 6: Mintzer discloses that the initializing is performed in hardware (figure 3 and column 4, lines 33-34 of

Mintzer). The random number generator used to initialize the error diffusion process (column 7, lines 34-41 of Mintzer) is shown embodied as a physical system, and is thus hardware (column 4, lines 33-34 of Mintzer).

Regarding claim 7: Mintzer discloses that the first pixel position for processing can be any pixel position within the image (column 5, lines 31-33 of Mintzer). The first pixel position where the error diffusion processing begins (column 5, lines 33-36 of Mintzer). In order to being error diffusion, error diffusion constants are required (column 5, lines 24-30 of Mintzer). Before error diffusion, said constants are initialized by multiplication with a random number (figure 3 and column 7, lines 30-33 of Mintzer). Since random numbers are needed to initialize the error diffusion constants (column 7, lines 30-33 of Mintzer), said error diffusion constants being needed before error diffusion processing can commence (column 5, lines 24-30 of Mintzer), then the initializing is performed at initialization of the printing system.

Regarding claim 8: Mintzer discloses a computer readable medium, the medium containing software code (column 5, lines 6-10 of Mintzer). If the processing device is a personal computer (column 5, line 9 of Mintzer), then for the method to be performed, some form of computer readable medium containing some form of software code is inherently required.

Said software code comprises code for initializing a first error buffer with a first set of seed values (column 7, lines 30-36 of Mintzer). The use of a random number generator, embodied as random number generating code since said processing device is a personal computer (column 5, line 9 of Mintzer), to initialize the coefficients (column 7, lines 30-36 of Mintzer)

provides a first set of seed values. Since random numbers are used to initialize the error diffusion filter (column 7, lines 30-36 of Mintzer), the error values stored initially in the error buffer are therefore randomized. The initial error values obtained using a randomized error diffusion filter can be considered the initial random seed values of the error buffer.

Said software code further comprises code for using the seed values to start an error diffusion process (figure 3 and column 7, lines 32-36 of Mintzer), wherein a first pixel has a non-zero error value (column 5, lines 24-34 of Mintzer). The first or given pixel position has an associated error value ($e_i f^1$) which is used in the error diffusion process and is in general non-zero (column 5, lines 24-34 of Mintzer).

Claim Rejections - 35 USC §103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mintzer (US Patent 5,210,602) in view of Ball (*Sam's Teach Yourself Linux in 24 Hours*, by Bill Ball and Stephen Smoogen, Sam's Publishing, copyright 1998).

Regarding claim 10: Mintzer discloses that a personal computer is used as a processing device (column 5, lines 6-10 of Mintzer), thus inherently requiring some form of software code

on some form of computer readable medium in order to perform any error diffusion processing operations.

Mintzer does not disclose expressly that said computer readable medium is a compact disc.

Ball discloses using a compact disc (CD-ROM) to access files and programs (page 32, lines 4-5; and page 33, lines 2-3 of Ball).

Mintzer and Ball are combinable because they are from the same field of endeavor, namely the manipulation of digital computer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform image processing by executing software code stored on some form of computer readable medium, as taught by Mintzer, said medium being a compact disc, as taught by Ball. The motivation for doing so would have been that a compact disc is a commonly used medium on which to put computer data and software (page 32, lines 4-5 of Ball). Therefore, it would have been obvious to combine Ball with Mintzer to obtain the invention as specified in claim 10.

Regarding claim 11: Mintzer discloses that a personal computer is used as a processing device (column 5, lines 6-10 of Mintzer), thus inherently requiring some form of software code on some form of computer readable medium in order to perform any error diffusion processing operations.

Mintzer does not disclose expressly that said computer readable medium is a downloadable file.

Ball discloses retrieving downloadable files (page 194, lines 8-13 of Ball).

Mintzer and Ball are combinable because they are from the same field of endeavor, namely the manipulation of digital

computer data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform image processing by executing software code stored on some form of computer readable medium, as taught by Mintzer, said medium being a downloadable, as taught by Ball. The motivation for doing so would have been that it is easy to remotely obtain needed computer files by downloading files from the Internet or a server (page 194, lines 9-10 of Ball). Therefore, it would have been obvious to combine Ball with Mintzer to obtain the invention as specified in claim 11.

10. Claims 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mintzer (US Patent 5,210,602) in view of Shu (US Patent 5,757,976).

Regarding claim 12: Mintzer discloses a method for initializing a digital image reproduction system using error diffusion (column 5, lines 1-5 of Mintzer). Said method comprises initializing a first error buffer with a first set of seed values (column 7, lines 30-36 of Mintzer). Said random values are initially generated and stored for use with the error diffusion constants (column 7, lines 34-36 of Mintzer). Since random numbers are used to initialize the error diffusion filter (column 7, lines 30-36 of Mintzer), the error values stored initially in the error buffer are therefore randomized. The initial error values obtained using a randomized error diffusion filter can be considered the initial random seed values of the error buffer.

Said method further comprises using seed values in the error buffers to start an error diffusion process (figure 3 and column 7, lines 32-36 of Mintzer), wherein a first pixel has a

non-zero error value (column 5, lines 24-34 of Mintzer). The first or given pixel position has an associated error value ($e_i f^1$) which is used in the error diffusion process and is in general non-zero (column 5, lines 24-34 of Mintzer).

Mintzer does not disclose expressly initializing at least one other error buffer with an alternate set of seed values, wherein the alternate set of seed values varies numerically from the first set of seed values.

Shu discloses selecting one of multiple error diffusion filters (figure 9(930) and column 12, lines 8-15 of Shu) which are used to create the error diffusion values (column 12 lines 20-23 of Shu). The error diffusion filters each have different error diffusion weighting values (figures 4A-4B; figures 5A-5B; and column 4, lines 45-54 of Shu). Said error diffusion filters are adaptively applied to selected input image pixels in response to the grayscale color tonal values of the pixels (column 7, lines 3-6 of Shu).

Mintzer and Shu are combinable because they are from the same field of endeavor, namely error diffusion processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to create at least one alternate error diffusion filter connected to the error diffusion filter of Shu, which would thus create an alternate set of seed values for the error buffer, and include said error buffer as an alternate error buffer in the system taught by Mintzer. The motivation for doing so would have been to be able to adaptively select error diffusion filters, and thus the set of seed values, based on the grayscale color tonal values of the pixels in the image under consideration (column 7, lines 3-6 of

Shu). Therefore, it would have been obvious to combine Shu with Mintzer to obtain the invention as specified in claim 12.

Regarding claim 13: Mintzer discloses that the first set of seed values further comprises replicas of a constant (column 7, lines 30-32 and lines 38-41 of Mintzer). If a set of constants are used for the error diffusion coefficients (column 7, lines 30-32 of Mintzer), then the first set of seed values would comprise replicas of a constant.

Further regarding claim 14: Mintzer discloses that one set of constants are used for the error diffusion processing of the first color (figure 2a and column 6, lines 34-41 of Mintzer) and another separate set of constants are used for the error diffusion processing of the second color (figure 2b and column 6, lines 56-61 of Mintzer). Since the set of constants for the first color and the set of constants for the second color are separate and distinct sets of coefficients used for processing a specific color, then the set of seed values corresponding to the second color comprises replicas of a different constant than the constant corresponding to the first color.

Mintzer does not disclose expressly that the alternate set of seed values comprises replicas of a different constant than that used in the first set.

As discussed above in the arguments regarding claim 12, which are incorporated herein, Mintzer in view of Shu discloses an alternate error buffer with an alternate set of seed values.

Mintzer and Shu are combinable because they are from the same field of endeavor, namely error diffusion processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to apply a different set of constants, as taught by Mintzer, as the alternate set of seed

values in the alternate error buffer, as taught by Shu. The motivation for doing so would have been to be able to adaptively select error diffusion filters, and thus the set of seed values, based on the grayscale color tonal values of the pixels in the image under consideration (column 7, lines 3-6 of Shu). If the same set of constants were used for the first set of seed values and the alternate set of seed values, then the adaptive selection of said first set or said alternate set would not produce a different relevant result. Therefore, it would have been obvious to combine Shu with Mintzer to obtain the invention as specified in claim 14.

Regarding claim 15: Mintzer discloses error buffers, each error buffer for each of a plurality of colors (figures 2a-2c; and column 6, lines 42-46 and lines 62-68 of Mintzer). Each error buffer contains a set of coefficients that may be constants or random numbers (column 7, lines 30-33 of Mintzer).

Mintzer does not disclose expressly that said at least one other error buffer further comprises three error buffers, wherein each set of seed values in each buffer further comprise replicas of constants, each buffer having a different constant.

As discussed above in the arguments regarding claim 12, which are incorporated herein, Mintzer in view of Shu discloses an alternate error buffer with an alternate set of seed values.

Mintzer and Shu are combinable because they are from the same field of endeavor, namely error diffusion processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use three error buffers, one for each color, as taught by Mintzer, in conjunction with the alternate error buffer taught by Mintzer in view of Shu. Each error buffer would contain a set of constants, as taught by

Mintzer. Since each error buffer is applied to a different color, the constant for each error buffer would inherently have to be different. The motivation for doing so would have been to be able to perform error diffusion for each of the colors that are used to represent the color image (column 7, lines 13-18 of Mintzer) and to be able to adaptively select error diffusion filters, and thus the set of seed values, based on the grayscale color tonal values of the pixels in the image under consideration (column 7, lines 3-6 of Shu). Therefore, it would have been obvious to combine Shu with Mintzer to obtain the invention as specified in claim 15.

Conclusion

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Art Unit 2624

JAT
08 March 2005

THOMAS D. LEE
PRIMARY EXAMINER